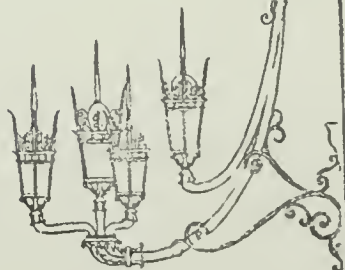


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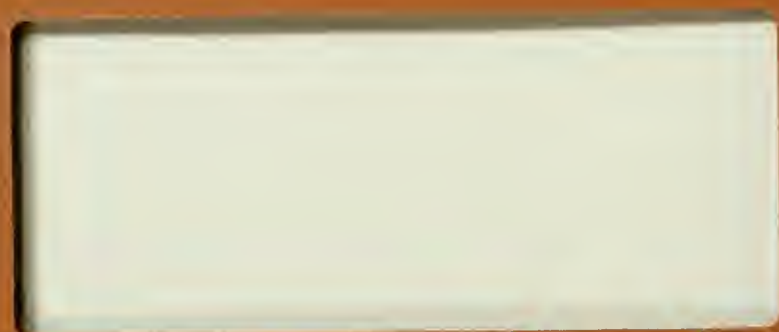


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BOSTON REDEVELOPMENT AUTHORITY  
BACK BAY-PRUDENTIAL CIRCULATION STUDY



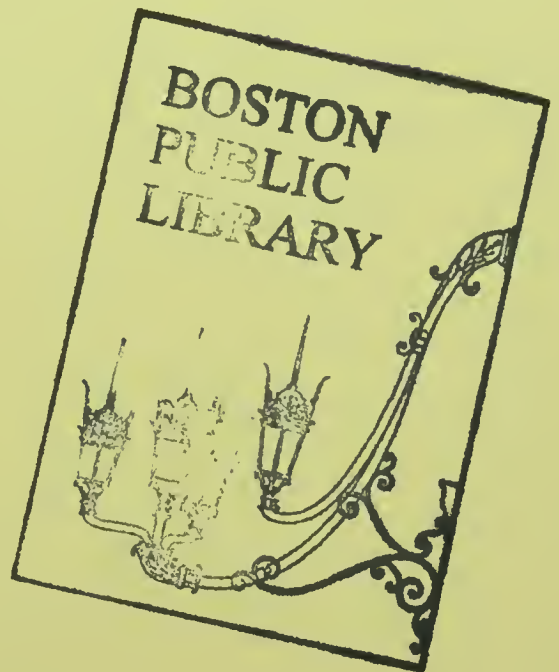
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BOSTON REDEVELOPMENT AUTHORITY  
BACK BAY-PRUDENTIAL CIRCULATION STUDY

December, 1967



murray d segal

transportation consultant

brookline, massachusetts





CONCLUSIONS  
AND  
RECOMMENDATIONS



## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

- (1) Activities at the War Memorial Auditorium have a pronounced effect on motor vehicle traffic in the study area.
- (2) The majority of motorists gain access to the Auditorium-Prudential complex from the Huntington Avenue side.
- (3) Boylston Street is relatively lightly used as an access route to the complex.
- (4) Traffic volume increases substantially on Hereford Street during peak periods of activity at the War Memorial Auditorium. Much of the increased travel is by taxis and motorists bound for nearby areas.
- (5) The awkward left turn movement from Hereford Street to the Ring Road is a serious limitation on the efficiency of flow through the Dalton-Boylston-Hereford Street intersection. The offset in the center lines of Dalton and Hereford Streets creates the difficult geometry.
- (6) The three cross-town feeder streets (Hereford, Gloucester, and Fairfield) offer relatively little service to the Prudential complex under the existing operating situation.
- (7) Service to the Prudential complex can be substantially improved by reversing the direction of traffic flow on these three feeder streets and developing the inherent physical capacity of the Exeter Street-Huntington Avenue approach route.

### Recommendations

- (1) It is recommended that the direction of traffic flow on the following streets be modified (see Figure 1):
  - a. Hereford Street (presently southbound, proposed northbound)
  - b. Gloucester Street (presently northbound, proposed southbound)
  - c. Fairfield Street (presently southbound, proposed northbound)
- (2) The City should take steps to develop the inherent physical capacity of the Exeter Street-Huntington Avenue approach.





ARROWS INDICATE DIRECTION  
OF TRAFFIC FLOW

PROPOSED DIRECTION  
OF TRAFFIC FLOW





## INTRODUCTION



## INTRODUCTION

### Study Purpose

Several recent studies of specific traffic problems in Boston's Back Bay have suggested the advisability of modifying the traffic flow pattern in the area, particularly with respect to the cross-town facilities linking Beacon and Boylston Streets. This study has been designed to thoroughly analyze the implications of these suggestions and to make recommendations regarding the feasibility of these changes. Of particular concern were the following streets: Hereford, Gloucester, Fairfield, and Exeter.

### Study Area

The Back Bay area included in this study (see Figure 2) lies just west of downtown Boston and is bounded by Massachusetts Avenue, Storrow Drive, Arlington Street, Boylston Street, and Huntington Avenue. Within these bounds lies the Prudential Center, a trip generator of major proportions, as well as other commercial and residential establishments. The Prudential Center itself is still under development, and substantial additions to its trip generating potential can be expected. The Christian Science development project falls within the study area, and the addition of these generators will add to the existing traffic loads. The War Memorial Auditorium on the northern edge of the complex is also a major traffic generator.

### Methodology

The specific question raised prior to the study concerned the utility of Hereford, Gloucester, and Fairfield Streets in serving





▲ ARROWS INDICATE EXISTING  
DIRECTION OF TRAFFIC FLOW

STUDY AREA

2





the War Memorial Auditorium-Prudential Center complex and the Back Bay area between Boylston and Beacon Streets. In order to evaluate existing and proposed operation plans, it was necessary to measure current travel patterns and volumes. Approximately 7,500 motorists using the key Boylston-Dalton-Hereford Street intersection were interviewed on two different days, and data describing trip origins, trip destinations, vehicle type, and trip frequency (see Appendix for sample form) was collected. Motorists' travel characteristics were measured on a typical weekday (August 24, 1967) and on a "peak" weekday (August 29, 1967). The national American Legion Convention was in progress on this "peak" day, and an address by the U. S. Secretary of State at the War Memorial Auditorium was the major event of the day. A sample of motorists using all three approaches to the key intersection was queried during the hours of 7 a.m. to 7 p.m. on both survey days. Traffic volume counts were taken at the following intersections:

- (1) Boylston Street, Ring Road, and Gloucester Street
- (2) Dalton Street and Belvidere Street
- (3) Dalton Street, Boylston Street, Ring Road, and Hereford Street

The area was divided into twenty-three (23) numerically identified traffic zones and fourteen (14) superzones for analysis of the travel patterns. (See Figures 3 and 4 for graphical presentation.) Interview data was coded, punched onto cards, transferred to computer tape, and finally summarized utilizing an IBM 360 computer.





KEY

07

ZONE BOUNDARY

ZONE NUMBER

PRUDENTIAL  
ORIGIN — DESTINATION

AREA A  
STUDY

## ZONE MAP CENTRAL ZONES

0 25 50 1 2



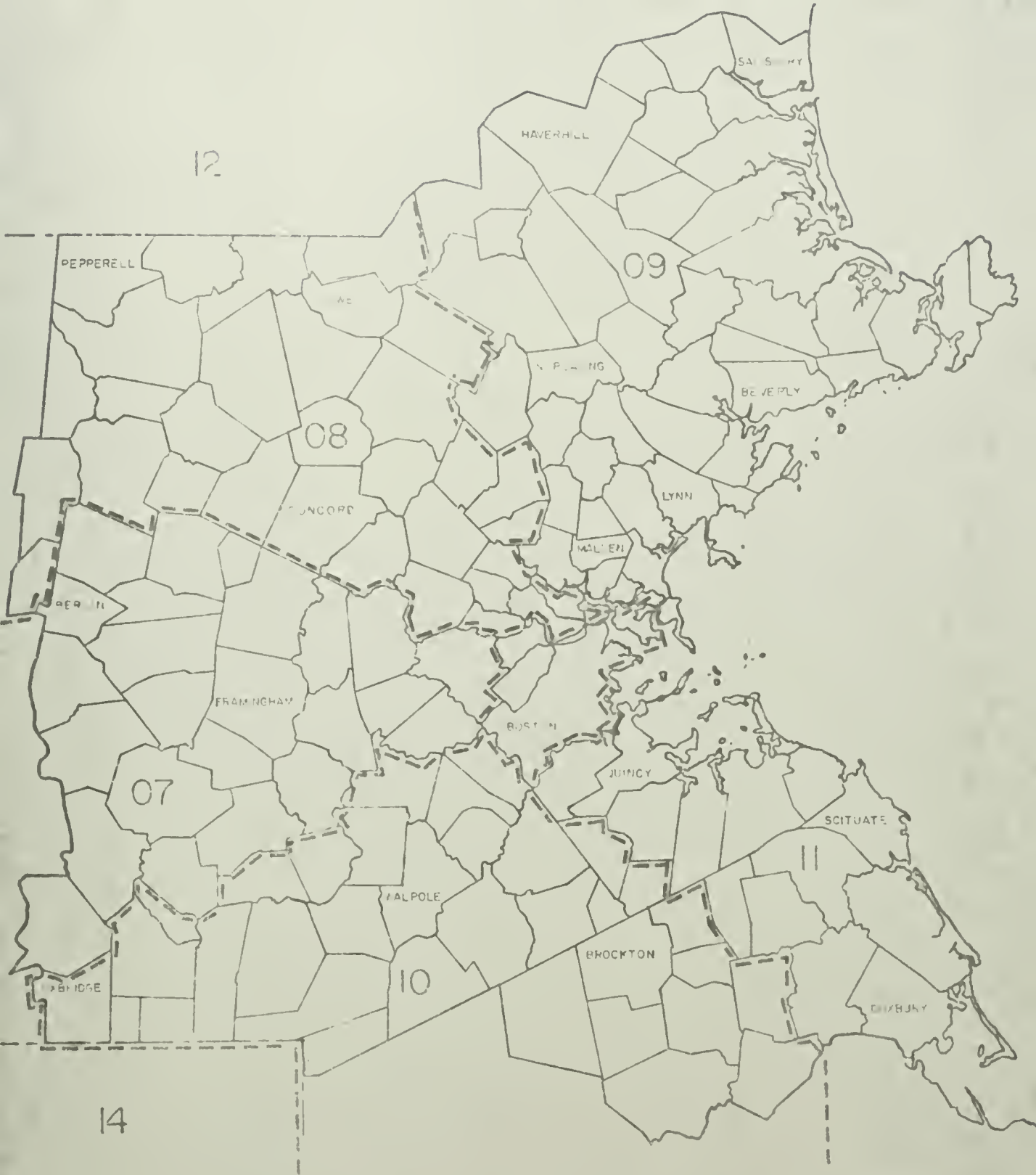
SCALE IN MILES



FIGURE

3

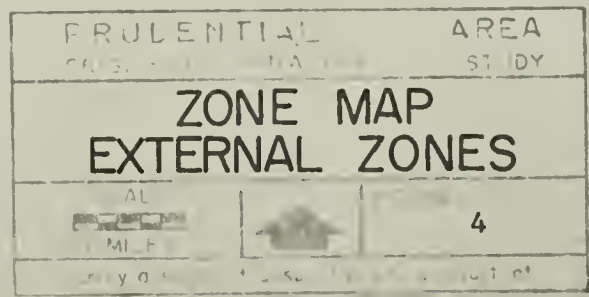




KEY

07 ZONE BOUNDARY

07 ZONE NUMBER







## CIRCULATION AND TRAVEL PATTERNS



Existing Facilities

The Prudential Center-War Memorial Auditorium-Christian Science complex **already** contains several large traffic generators, and future development plans indicate increases in the attracting power of this superblock. Land uses are divided between commercial, residential, and institutional, and this diversity promotes relatively large movements during periods of the day and week which normally are considered "off peak". Good public transit access is provided to the area along Huntington Avenue and Boylston Street, with three stations handling most of the transit trips. Long distance auto access from the west is excellent with a direct connection from the Massachusetts Turnpike to the southern edge of the superblock. Shorter auto trips from the west and southwest are served adequately by Huntington Avenue and Boylston Street. Motorists originating to the east in the Back Bay and Downtown Boston and from the North Shore areas must use the Beacon Street-Hereford Street or Beacon Street-Massachusetts Avenue route to gain access to the northerly side of the complex. An alternate approach for these motorists is the Beacon Street-Exeter Street-Huntington Avenue-Belvidere Street-Dalton Street routing. The Beacon Street-Hereford Street approach has the least capacity, due to the physical and operating characteristics of Hereford Street, particularly the difficult (~~for~~ left turning vehicles) layout of the Boylston-Hereford Street intersection. Under the existing one-way operational plan, Hereford Street offers access to the Study Area, while Gloucester Street serves as an egress route from the area. Fairfield Street offers little service to the area. All facilities except Boylston Street, Huntington Avenue, and Commonwealth Avenue have limited rights-of-way, permitting only two lanes



of moving traffic. Major signal controlled intersections in the area are:

- (1) Boylston-Hereford-Dalton Streets
- (2) Boylston-Exeter Streets
- (3) Huntington Avenue and West Newton Street

All other intersections on the immediate fringe of the study area are controlled by stop signs.

### Traffic Volumes

Traffic volumes on the arterial and connector streets along the north side of the study area are generally light, and range from a low of 1,400 vehicles (7 a.m. to 6 p.m.) on Fairfield Street to a high of approximately 8,000 vehicles on the easterly end of Boylston Street. Hereford Street carries approximately 3,500 vehicles during the same time period on a normal day, and substantially lower volumes were recorded on Gloucester Street (1,850 vehicles). Dalton Street, which feeds traffic into the Prudential Ring Road and also serves as an exit from the area (to Boylston Street west-bound), carries about 5,100 vehicles, and this volume makes it one of the more heavily travelled streets.

Table I summarizes the traffic volume counted on the three intersecting streets at the key intersection of Boylston-Dalton-Hereford Streets. It is noted that traffic on Boylston Street remained approximately constant over the two-day period, while Hereford Street traffic increased approximately 30% and Dalton Street approximately 40%. The morning peak period (see Appendix Figures A through F) increased from 13% (Hereford Street approach) to 53% (Dalton Street approach). The afternoon peak on the "convention" day was early in the afternoon (1:15 - 2:15 p.m.), and the Hereford Street approach showed the only substantial increases (43%) over the





TABLE I  
Traffic Volumes

<u>Street</u>	<u>Period</u>	<u>Total Vehicles</u>		<u>Percent Change</u>
		<u>Day 1</u>	<u>Day 2</u>	
Boylston Street	7 a.m. - 9 a.m.	1130	1280	13.3
	9 a.m. - 4 p.m.	3470	3900	12.4
	4 p.m. - 6 p.m.	1100	1250	13.6
	7 a.m. - 6 p.m.	5700	6430	12.8
Hereford Street	7 a.m. - 9 a.m.	540	590	9.2
	9 a.m. - 4 p.m.	2140	3080	43.9
	4 p.m. - 6 p.m.	710	880	23.9
	7 a.m. - 6 p.m.	3390	4550	34.2
Dalton Street	7 a.m. - 9 a.m.	980	1150	17.3
	9 a.m. - 4 p.m.	3130	3910	24.9
	4 p.m. - 6 p.m.	1030	1150	11.6
	7 a.m. - 6 p.m.	5140	6210	20.8

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets



"normal" afternoon peak (4:30 to 5:30 p.m.).

### Travel Patterns

Before beginning a discussion of the travel patterns which were measured by interview techniques, it is emphasized that these patterns are only those represented by motorists using the intersection of Boylston-Hereford-Dalton Streets. Since these three approaches handle almost all of the access to the Prudential complex from the north side, all interviewing was limited to the one location. Total number of trip ends for each superzone is summarized in Table II for both the "normal" and "peak" days. The reader is referred to Figures 3 and 4 for a graphic description of the limits of these superzones. The Prudential area complex (superzone 01) has the largest number of trip ends on both days, as well as the largest increase in trip ends on the peak day. Of all the vehicles passing through the intersection, approximately 19% had an origin or destination in the Prudential complex on the first interview day. This percentage is increased slightly to 20% on the day of the American Legion Convention. The portion of the Back Bay east of Massachusetts Avenue and north of Boylston Street also accounts for a large number of trip ends on both days (2,800 and 3,900) for a relatively large part of the total increases in trip ends (21%). The CBD (superzone 03) also accounts for a substantial number of trip ends and a relatively large increase on the second day. Cruising vehicles, which are mostly taxis looking for a fare, show the largest percentage increase in traffic on the peak day (114%).

Much of the extra travel on the peak day results from trips which have neither an origin nor a destination inside of the Prudential complex. For example, there are close to 900 more trip ends in



TABLE II  
Summary of Trip Ends  
All Trips

<u>Superzone</u>	<u>Trip Ends</u>		<u>Net Change</u>
	<u>Day 1</u>	<u>Day 2</u>	
01 (Prudential)	4249	5543	1294
02 (Back Bay east of Mass. Ave.)	2790	3918	1128
03 (Downtown, Charlestown, E. Boston)	2288	3015	727
04 (South End, South Boston)	1988	2497	509
05 (Dorchester, Roxbury, southwest Boston)	1339	1411	72
06 (Allston, Brighton, Brookline)	3344	3623	279
07 (Nearby towns to west)	817	864	47
08 (Nearby towns to north and northwest)	2121	2690	569
09 (Nearby towns to northeast)	1115	1344	229
10 (Nearby towns to southwest)	483	398	-85
11 (Nearby towns to southeast)	559	638	79
12 (Maine, New Hampshire, Vermont)	208	205	-3
13 (Western Massachusetts)	216	151	-65
14 (Outside of northern N. E. and Mass.)	367	342	-25
99 (Cruising Vehicles)	<u>578</u>	<u>1235</u>	<u>657</u>
<u>Total</u> -----	<u>22,462</u>	<u>27,874</u>	<u>5412</u>

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets



the Back Bay superzone (02) on the peak day (see Table III). This does not imply that this increased travel is unrelated to the activity in the Prudential complex, and specifically the Convention at the Auditorium. In fact, it is most likely that a large part of the increased traffic is indeed related to the Convention itself. Nevertheless, over 53% of the difference in trip making on the two days is composed of trips having neither origin nor destination inside of the complex.

The results of the origin-destination interviews are graphically portrayed for ease of analysis in Figures 5 through 12. These desire line charts connect origins and destinations with "bands" which vary in width in relation to the number of trips. The influence of taxi trips to the Prudential can be seen in Figures 5 and 6. These two charts show traffic between the Prudential complex and the Boston and Brookline superzones. It can be seen that the origins of Prudential bound trips shifts heavily from the west on the normal day to the east on the peak day. This is related to taxi trips from the CBD (downtown hotels), but also may include trips from the airport directly to the Convention headquarters at the Sheraton-Boston and the Auditorium itself. Relatively small numbers of trips to the complex come from the south or the east. The large number of through trips between Boston and Brookline superzones are illustrated in Figures 7 and 8. Some significant increases can be noted in these movements, particularly in the Back Bay area (superzone 02).

The longer trips destined to the Prudential complex are shown in Figures 9 and 10. Here again, notice that the origins are practically all in the north and northwest sections of the region. It should be emphasized that the trip movements have been drawn to the geographic





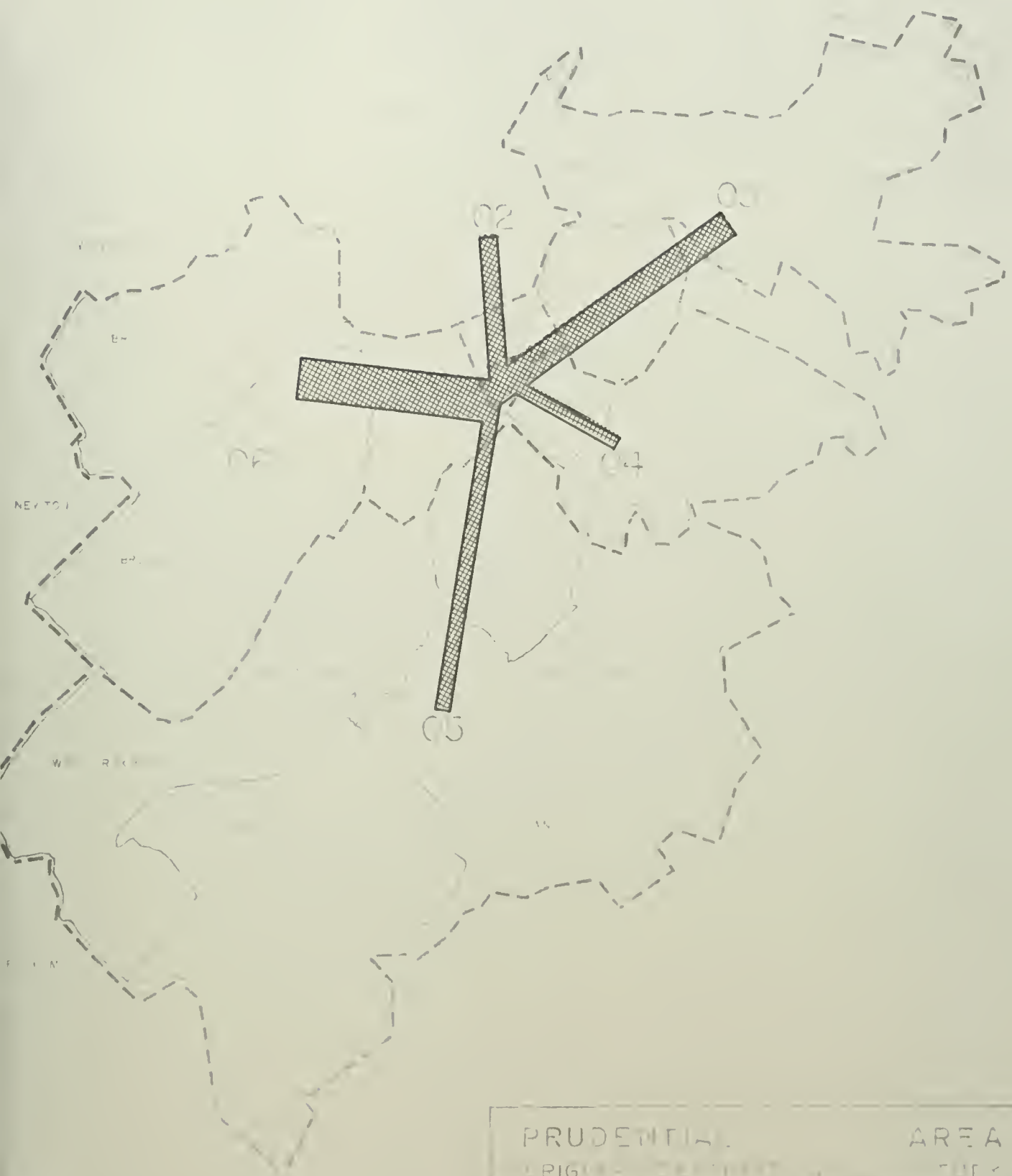
TABLE III  
Summary of Trip Ends  
Excluding Trips to or from Prudential Center  
and Cruising Vehicles

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<u>Superzone</u>	<u>Trip Ends</u>		<u>Net Change</u>
	<u>Day 1</u>	<u>Day 2</u>	
02	2536	3408	872
03	1823	2008	185
04	1805	2242	437
05	1102	1148	46
06	2646	2833	187
07	587	644	57
08	1161	1524	363
09	498	545	47
10	339	268	-71
11	328	487	159
12	130	123	7
13	149	108	-41
14	<u>228</u>	<u>208</u>	<u>-20</u>
<u>Total</u> ---	<u>13,332</u>	<u>15,546</u>	<u>2,214</u>

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets



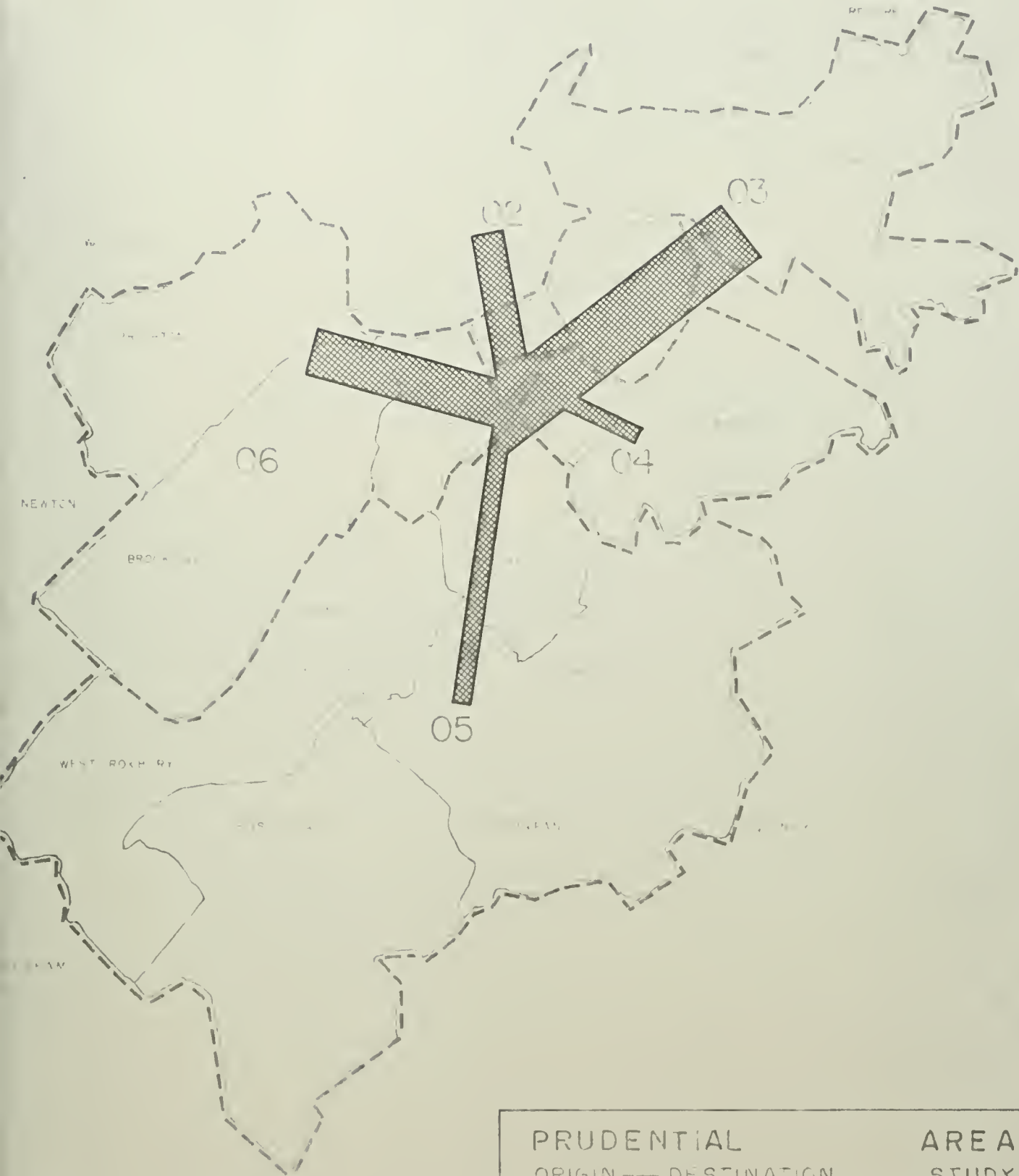


KEY  
 - - - - ZONE BOUNDARY  
 07 ZONE NUMBER  
 1000  
 600  
 200 WIDTH OF BAND INDICATES  
 VOLUME OF TRAFFIC

PRUDENTIAL AREA  
 INTERNAL TRAVEL PATTERNS DAY 1  
 Figure  
 5

MOVEMENTS SHOWN REPRESENT TRIPS  
 BETWEEN CENTRAL ZONES & THE  
 PRUDENTIAL CENTER





# KEY

----- ZONE BOUNDARY

07 ZONE NUMBER

1000  
600  
200 WIDTH OF BAND INDICATES  
VOLUME OF TRAFFIC

MOVEMENTS SHOWN REPRESENT TRIPS  
BETWEEN CENTRAL ZONES & THE  
PRUDENTIAL CENTER

PRUDENTIAL

ORIGIN — DESTINATION

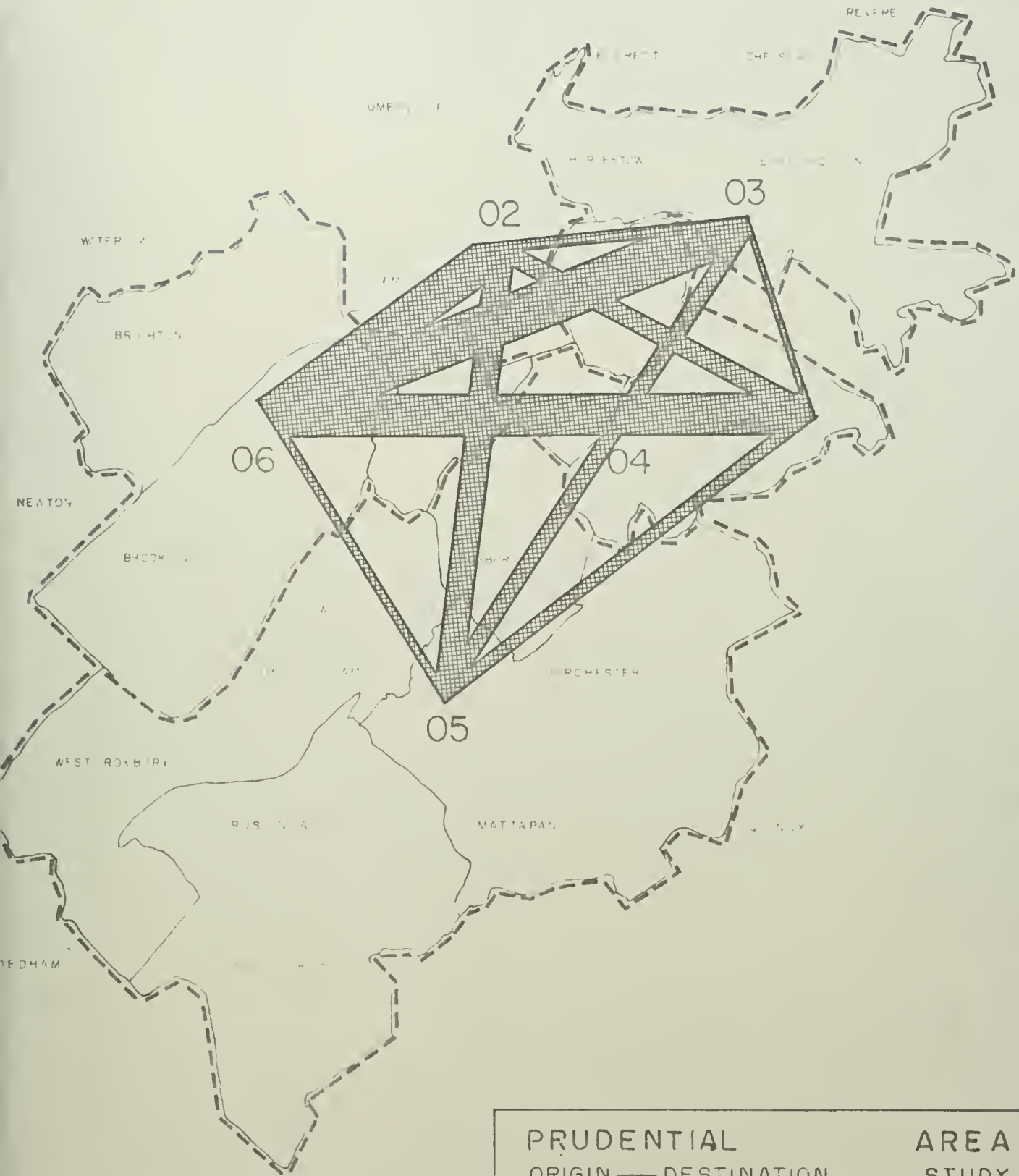
AREA A

STUDY

## INTERNAL TRAVEL PATTERNS DAY 2.







KEY

----- ZONE BOUNDARY

07 ZONE NUMBER

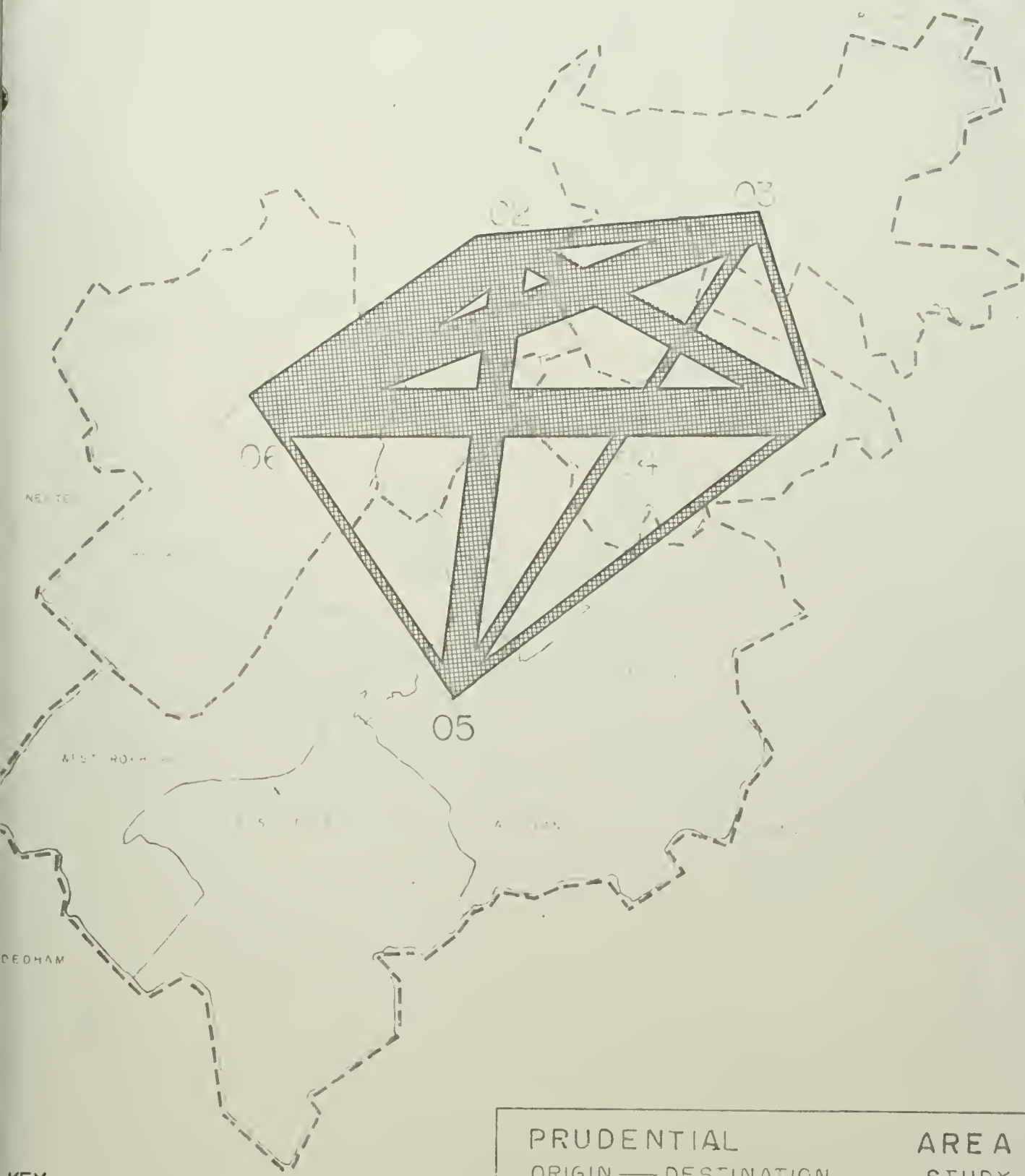
1000  
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200

WIDTH OF BAND INDICATES  
VOLUME OF TRAFFIC

MOVEMENTS SHOWN REPRESENT TRIPS  
BETWEEN CENTRAL ZONES







**KEY**

--- ZONE BOUNDARY

**07** ZONE NUMBER

1000  
600  
200

WIDTH OF BAND IN INDICATES  
VOLUME OF TRAFFIC

MOVEMENTS SHOWN REPRESENT TRIPS  
BETWEEN EXTERNAL ZONES & THE  
PRUDENTIAL CENTER

PRUDENTIAL		AREA
ORIGIN — DESTINATION		STUDY
INTERNAL TRAVEL PATTERNS DAY 2		
		8
S. M. H. CONSULTANT		





KEY

--- ZONE BOUNDARY

07 ZONE NUMBER

1000  
600  
200 WIDTH OF BAND INDICATES  
VOLUME OF TRAFFIC

MOVEMENTS SHOWN REPRESENT TRIPS  
BETWEEN EXTERNAL ZONES & THE  
PRUDENTIAL CENTER

PRUDENTIAL  
ORIGIN—DESTINATION

AREA  
STUDY

INTERNAL—EXTERNAL  
TRAVEL PATTERNS · DAY 1

SCALE

IN MILES

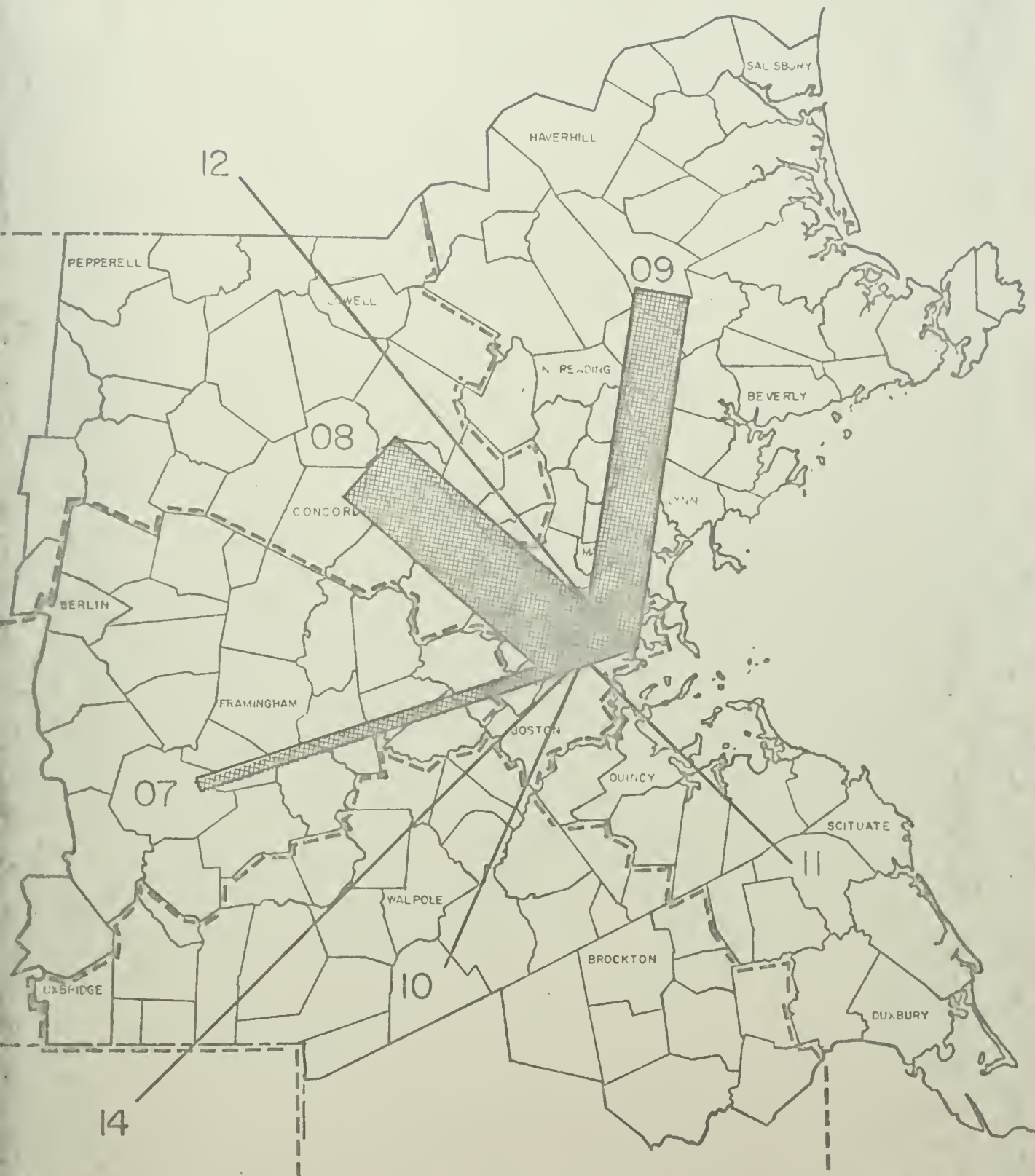


FIGURE

9

Curry & Segal transportation consultant





# KEY

--- ZONE BOUNDARY

07 ZONE NUMBER

1000  
600  
200 WIDTH OF BAND INDICATES  
VOLUME OF TRAFFIC

MOVEMENTS SHOWN REPRESENT TRIPS  
BETWEEN EXTERNAL ZONES & THE  
PRUDENTIAL CENTER

PRUDENTIAL AREA  
ORIGIN— DESTINATION STUDY

INTERNAL— EXTERNAL  
TRAVEL PATTERNS · DAY 2

SCALE  
1 5  
IN MILES



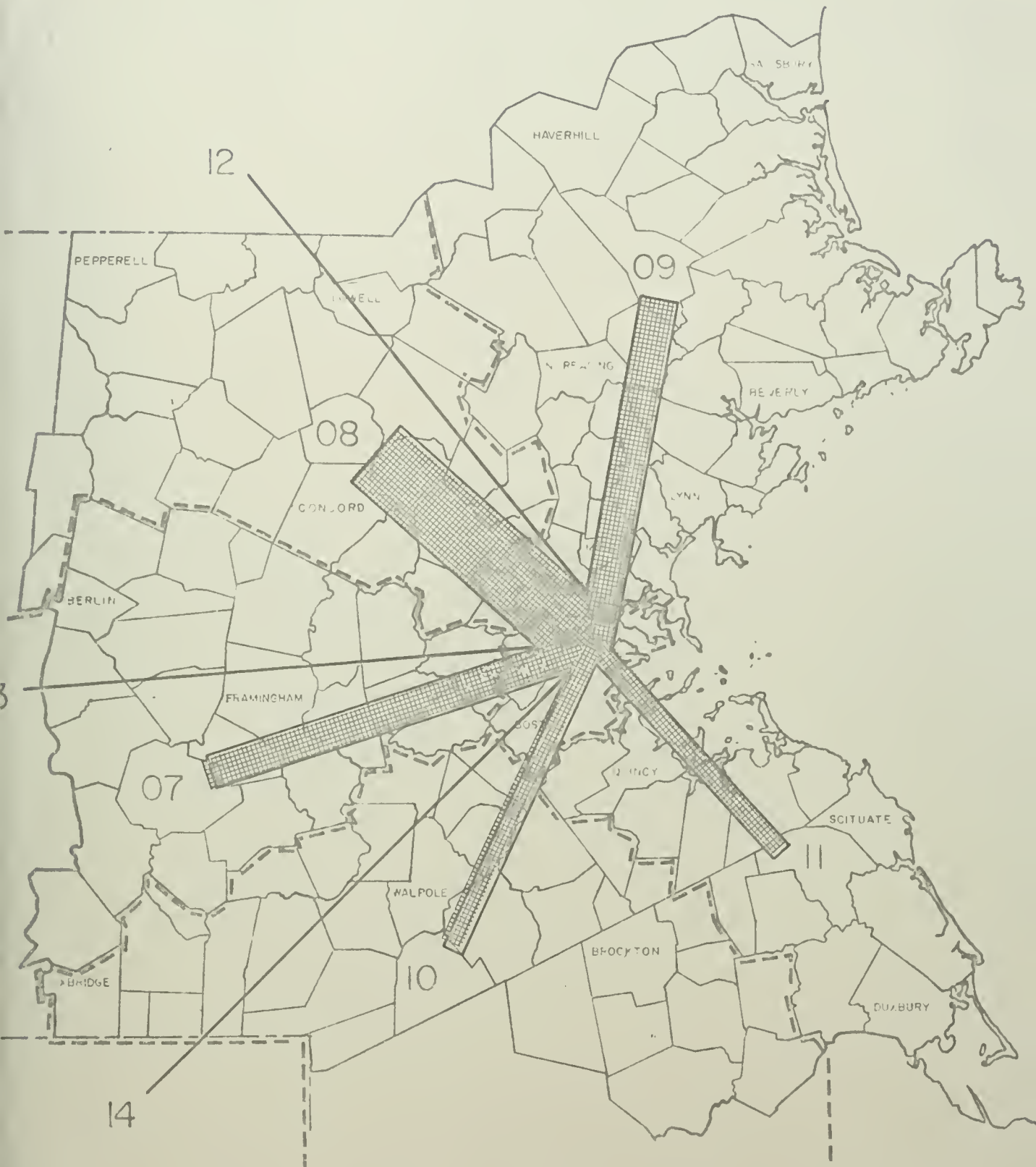
FIGURE

10

murray d. segal transportation consultant







# KEY

--- ZONE BOUNDARY

07 ZONE NUMBER

1000  
600  
200 WIDTH OF BAND INDICATES  
VOLUME OF TRAFFIC

MOVEMENTS SHOWN REPRESENT TRIPS  
BETWEEN EXTERNAL & CENTRAL ZONES

PRUDENTIAL AREA  
ORIGIN-DESTINATION STUDY

INTERNAL-EXTERNAL  
TRAVEL PATTERNS-DAY 2

SCALE

1" = 10 MILES

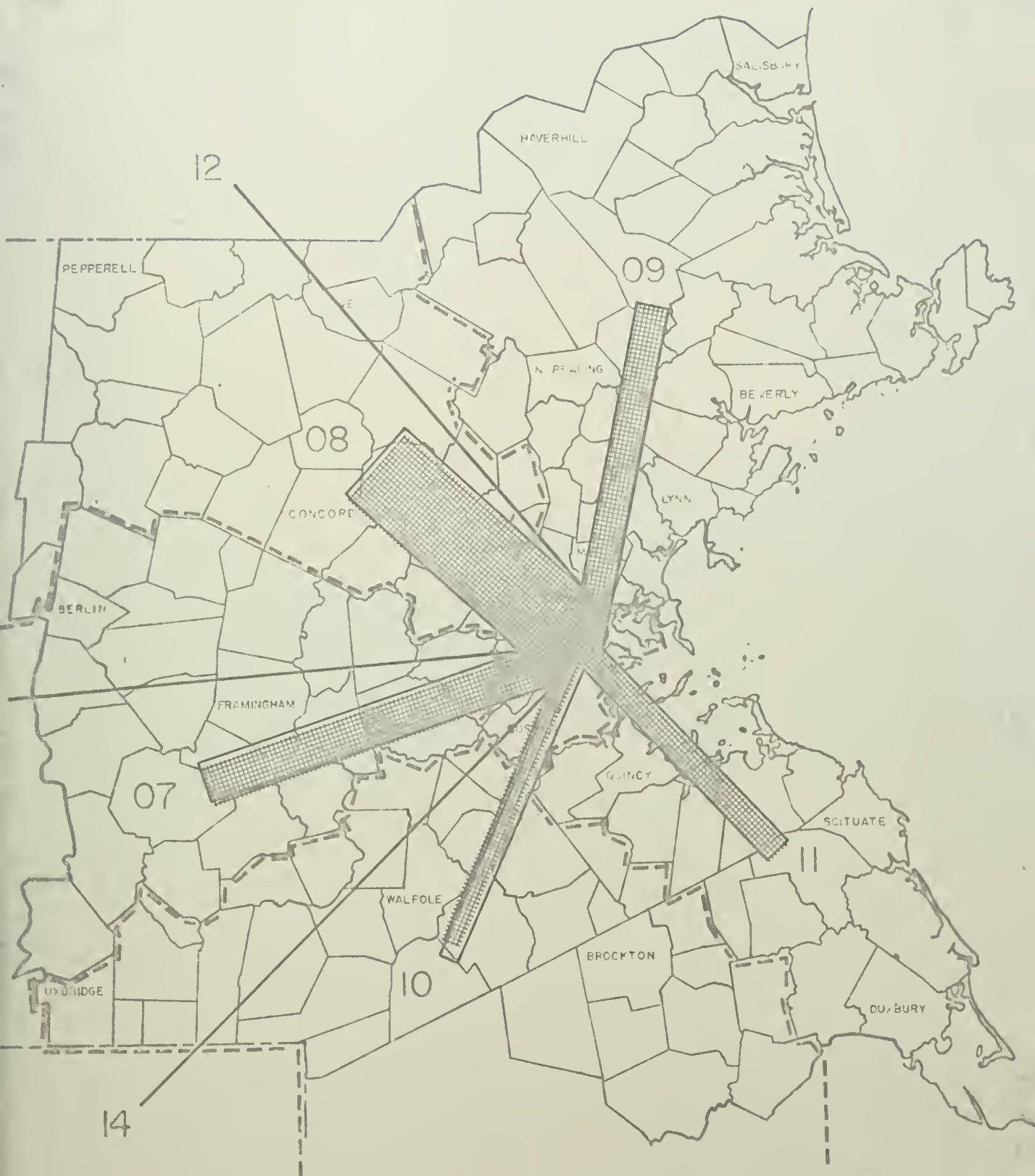
FIGURE

11

Jerry A. Segal transportation consultant





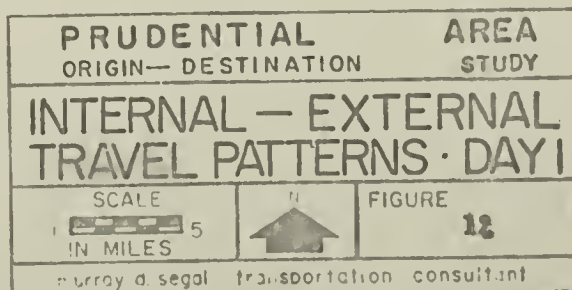


KEY  
 --- ZONE BOUNDARY

07 ZONE NUMBER

1000  
 600  
 200 WIDTH OF BAND INDICATES  
 VOLUME OF TRAFFIC

MOVEMENTS SHOWN REPRESENT TRIPS  
 BETWEEN EXTERNAL & CENTRAL ZONES





center of each superzone, but that the great majority of these trips come from the cities and towns very close to Boston. Figures 11 and 12 show through trips which originate outside of Boston and Brookline. Here again, the drawings have been simplified by showing the destination as in the CBD. Since most of these trips are, in fact, destined to the center of the city, the drawing is a fair representation of the travel pattern. The same preponderance of trip origins in the north and northwest exists, although some significant movements come from the south.

Since the specific objective of this study has been to evaluate the efficiency of the Back Bay crosstown streets in serving the area, a detailed analysis of trips destined to the Prudential complex was made. Table IV shows the number of trips destined for the entire Prudential complex by each of the three approach streets. On the normal day almost 2,600 trips were made to the Prudential complex. On the Convention day travel to the area increased to nearly 3,600 trips. Of this increase of 1,000, close to 800 were destined to the War Memorial Auditorium itself (see Table V). About half of the Auditorium trips were made on the Dalton Street approach to the intersection with about 30% of the motorists using Hereford Street and the balance using Boylston Street. Thus, of all of the trips to the Auditorium on the peak day entering from the northern side of the complex, only one-third (225) used the Back Bay crosstown streets. A further examination of the origins of the motorists who used Hereford Street as an approach route showed that one-third of these trips started in the Boston CBD. Alternate routes for these CBD trips are available over the Exeter Street-Huntington Avenue approach. Figure 13 summarizes the general origins and destinations of all motorists who used Hereford Street. These data were derived



TABLE IV

Trip Destinations in Prudential Complex

D A Y 1			D A Y 2		
<u>Street</u>	<u>No. of Trips</u>	<u>% Total</u>	<u>Street</u>	<u>No. of Trips</u>	<u>% Total</u>
Boylston	1320	51.3	Boylston	1221	34.0
Hereford	876	34.0	Hereford	1470	41.0
Dalton	<u>379</u>	<u>14.7</u>	Dalton	<u>895</u>	<u>25.0</u>
<u>TOTAL</u>	<u>2575</u>	<u>100.0</u>		<u>3586</u>	<u>100.0</u>

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets



TABLE V  
Trips to War Memorial Auditorium

	<u>Day 2</u>	<u>% Total</u>
Boylston Street	168	21.9
Hereford Street	225	29.3
Dalton Street	<u>375</u>	<u>48.8</u>
<u>TOTAL</u> -----	<u>768</u>	<u>100.0</u>

Source: O-D Survey conducted at Boylston,  
 Hereford & Dalton Streets





from the interview surveys and represent turning movements derived from origin-destination information. It can be seen that the very large majority of the motorists on both days who use Hereford Street have destinations at points other than the Prudential-Auditorium complex. The street provides access to the CBD via a left turning movement, a route to the Fenway and points west via a right turn, and a through movement to the South End and other southerly points in the city. In summary, it is clear that access to the Prudential-Auditorium complex is not now a major function of Hereford Street under normal or peak operating conditions.

#### Trip Characteristics

Data on types of vehicles using the key intersection is presented in Table VI and points up an expected relationship. The number of taxi trips increases on the peak day by approximately 75% (973 trips), and this represents approximately one-third of the total increase in traffic. At the same time, taxi trips to the Prudential complex increased by 500 (see Table VII) with the difference accounted for by "cruising" cabs having neither a specific origin nor destination. The increase in truck traffic parallels passenger car increases.

Motorists interviewed at the key intersection were asked for information on the frequency with which they ~~make~~ the trip. The results of this question appear in summarized form in Table VIII and raise questions which are difficult to answer. It would be expected that the absolute number of trips which were reported on a daily basis would be the same on both survey days. Conversely, there should be more trips in the less frequent categories on the peak day. The data collected does not confirm these expectations. There was an increase of 462 trips to the Auditorium on the peak day, and this does



TABLE VI  
Vehicle Types

<u>Street</u>	D A Y 1				D A Y 2			
	<u>Auto</u>	<u>Truck</u>	<u>Taxi</u>	<u>Total</u>	<u>Auto</u>	<u>Truck</u>	<u>Taxi</u>	<u>Total</u>
Boylston	3190	627	495	4312	3370	698	422	4490
Hereford	2776	513	305	3594	3390	501	836	4727
Dalton	2497	322	506	3325	3223	539	1021	4783
<u>TOTAL</u>	8463	1462	1306	11,231	9983	1738	2279	14,000
<u>% OF TOTAL</u>	75.4	13.0	11.6	100.0	71.3	12.4	16.3	100.0

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets



TABLE VII  
Taxi Trips to Auditorium and Prudential

<u>Street</u>	A U D I T O R I U M			P R U D E N T I A L		
	<u>Day 1</u>	<u>Day 2</u>	<u>Increase</u>	<u>Day 1</u>	<u>Day 2</u>	<u>Increase</u>
Boylston	6	48	42	127	187	60
Hereford	4	93	89	106	175	69
Dalton	<u>0</u>	<u>184</u>	<u>184</u>	<u>27</u>	<u>55</u>	<u>28</u>
<u>TOTAL</u>	<u>10</u>	<u>325</u>	<u>315</u>	<u>260</u>	<u>417</u>	<u>157</u>

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets



TABLE VIII  
Trip Frequency

Day 1

<u>Street</u>	<u>Daily</u>	<u>Once or Twice Weekly</u>	<u>Occasionally</u>	<u>First Time</u>	<u>Total</u>
Boylston	2028	597	1061	626	4312
Hereford	1670	568	960	396	3594
Dalton	<u>1775</u>	<u>366</u>	<u>765</u>	<u>419</u>	<u>3325</u>
TOTAL	5473	1531	2786	1441	11,231
PERCENT	48.7	13.7	24.8	12.8	100.0

Day 2

<u>Street</u>	<u>Daily</u>	<u>Once or Twice Weekly</u>	<u>Occasionally</u>	<u>First Time</u>	<u>Total</u>
Boylston	2184	466	1370	470	4490
Hereford	2727	766	742	492	4727
Dalton	<u>2814</u>	<u>413</u>	<u>1083</u>	<u>473</u>	<u>4783</u>
TOTAL	7725	1645	3195	1435	14,000
PERCENT	55.2	11.8	22.8	10.2	100.0

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets





correlate reasonably well with the additional 517 trips in the less-than-daily frequency categories. However, the number of "daily" trips increased by over 2,200 on the peak day. There are several possible explanations for this finding. First, it is possible that the motorists are making the trip daily as reported, but using different facilities on different days. This seems unlikely, since traffic in the Prudential area was at a peak on the second interview day, and this fact should have been well known to motorists. Thus, if anything, one would have expected these "everyday" motorists to choose alternate routes on the peak day. A second possibility is that motorists who make the trip to the area several times during the day increased very substantially during the peak period. This group could include taxis and service vehicles, and it seems likely that these motorists could account for a substantial part of the difference. It is also possible that the question itself was misinterpreted by some of the interviewees.



DISCUSSION OF CONCLUSIONS  
AND RECOMMENDATIONS



## DISCUSSION

Problems

The data which has been collected in these studies plus the observations made by the consultant have defined several problem areas which hamper traffic flow into and through the neighborhood. From an operational standpoint one of the major concerns is the difficult turning movement from Hereford Street into the Prudential Ring Road. The offset of the center lines of Dalton and Hereford Streets make this movement awkward, and even though the volumes are relatively small during most periods, the movement conflicts with all of the approaching traffic from Dalton Street and creates an in-ordinate amount of delay. The largest volume making the turn at this point was 100 vehicles during the morning peak hour (8:15 to 9:15 a.m.) of the Convention day. During all other peak periods this movement amounted to only 20 to 40 vehicles per hour. On-the-spot observations, however, suggest that very large amounts of delay are created by these left turning vehicles, and traffic operations on all three approach streets to the intersection are hampered.

Reversing the direction of traffic flow on Hereford Street has been recommended previously, but several questions were raised about this proposal and its effect on traffic operations. Specifically, concern has been expressed over the following items:

- (1) Is Hereford Street serving as a major access facility to the Prudential-Auditorium complex?
- (2) Is Hereford Street serving through traffic to the South End in combination with Dalton, Belvidere, and West Newton Streets?

The data from these surveys clearly indicates that the majority of motorists on Hereford Street - whether they originate from the east, north, or west - are destined to areas served by Boylston Street.



Although a significant number of trips to the Prudential complex arrive via Hereford Street, most of these are taxis, and a large percentage are cruising cabs. Only small volumes of traffic are using Hereford Street as a through route to the South End (see Figure 13), and the reversing of the direction of traffic flow on this street should not divert large traffic loads to Massachusetts Avenue.

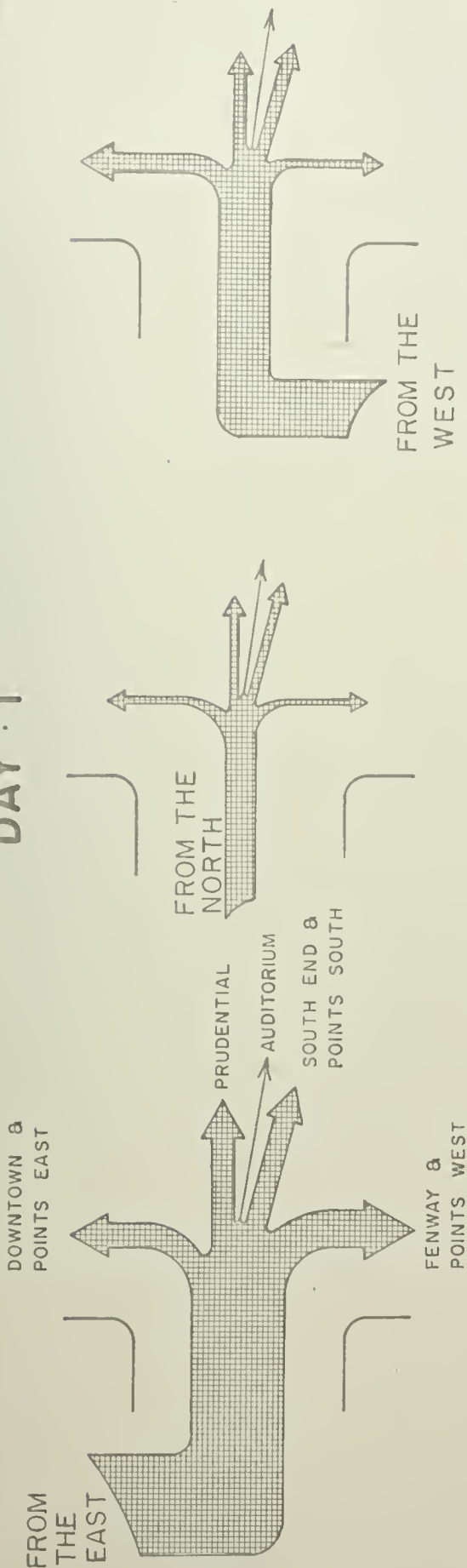
The recent action by the Boston Traffic Commission in reversing the flow of traffic on Exeter Street to southbound has created an advantageous access route to the Prudential complex and the South End. This street, which is capable of moving two or three lanes of traffic from Beacon Street to Huntington Avenue, provides an excellent tie-in to the Prudential Ring Road and also will service the commercial and residential development in the eastern sector of the complex. At the present time construction between Boylston Street and Huntington Avenue limits the capacity of the street. Parking on both sides between Beacon and Boylston Streets also limits the capacity. The City should take steps to increase the efficiency of flow on this street commensurate with its inherent physical capacity. At the same time, operations on Boylston Street are now hindered by construction and a lack of parking control. This street carries a surprisingly light traffic volume (5,000 to 3,000 vehicles per day), and this is probably due in part to the inefficient operating conditions.

It has been shown already that Hereford Street provides some access to the Prudential area. It should also be pointed out that Gloucester Street provides the only access from the complex to the Massachusetts Turnpike westbound. However, this movement requires considerable extra travel and cannot be made from the Ring Road or

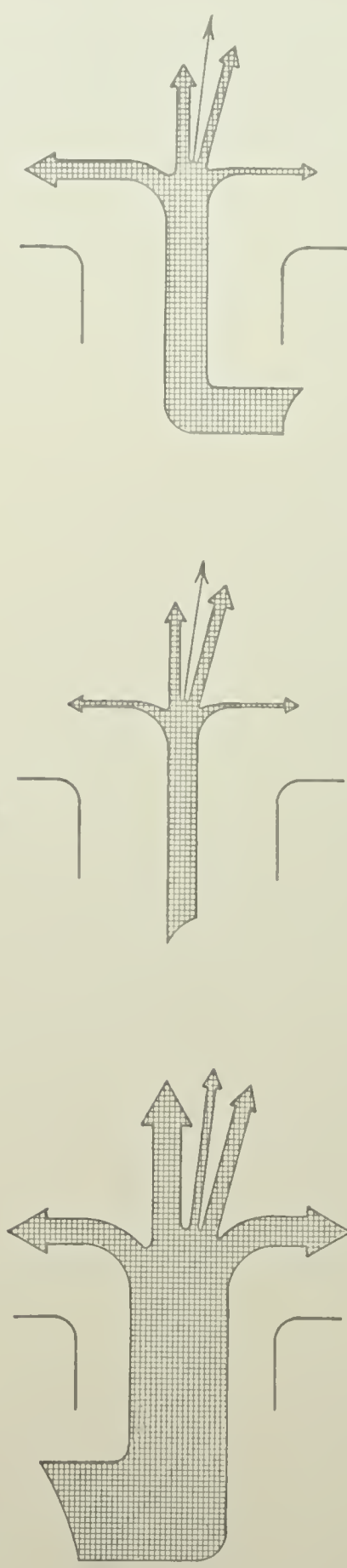




# DAY 1



# DAY 2



NOTE: WIDTH OF BAND  
REPRESENTS VOLUME  
OF TRAFFIC  
0.10" = 10% TOTAL TRIPS

## TRAFFIC PATTERNS HEREFORD ST.



PRUDENTIAL AREA  
ORIGIN — DESTINATION STUDY



garage on the north side. Fairfield Street serves no useful function insofar as the Prudential complex is concerned. In addition, the combination of two southbound streets (Fairfield and Exeter) a block apart hinders circulation patterns.

All of the above factors suggest that changing the direction of traffic flow on the three Back Bay streets (Fairfield, Gloucester, and Hereford) would result in an improved operational efficiency and markedly better over-all service to the Prudential complex. Reversing Hereford Street would eliminate the presently awkward left turn into the Ring Road and provide a more direct connection to the Massachusetts Turnpike via Newbury Street, as well as an alternate route to Kenmore Square and the Massachusetts Avenue bridge.



## APPENDIX



BOSTON REDEVELOPMENT AUTHORITY  
TRANSPORTATION PLANNING DIVISION  
PRUDENTIAL AREA ORIGIN-DESTINATION SURVEY

Interviewer's Instruction Manual

Study Purpose

The prime objective of this survey is to determine the number and character of all vehicles entering or leaving the Prudential Center area through the intersection of Boylston, Hereford, and Dalton Streets. To accomplish this objective a proportion of vehicle drivers using this intersection will be interviewed, and the required information as outlined in this Manual will be obtained.

Supervision

Members of the BRA and the consultant's staff will be on hand to assist and direct the interview operation. They will review the completed interviews and check for completeness and accuracy.

Duties of Interviewers

The interviewers will be located on various legs of the intersection. When the traffic is stopped by a red light, the interviewers will approach the stopped vehicles, starting with the first vehicle in line, and begin the interview.

The interviewers will address the drivers in a courteous, businesslike manner and will be as brief as possible in getting the desired information. On completion of the interview, the interviewer must thank the motorist for his cooperation.

A definite method of approach should be planned in order to secure the desired information. As a guide, the following is suggested:

"Good (morning, afternoon), (Sir, Madam), this is a traffic survey."

Then follow with the interview quickly before the driver can ask questions. Some drivers may be reluctant to give the information requested. Each should be assured that all information will be kept confidential and will not be used for enforcement of traffic ordinances.

If the driver refuses to cooperate, he will be permitted to continue his trip. The interviewers shall at all times be courteous to the motorists. Discourteousness cannot be tolerated, regardless of the driver's attitude.

Interview Form

A copy of the form to be used is attached. The different colors indicate different interview locations:

Yellow - Boylston Street  
Green -- Hereford Street  
Blue --- Dalton Street

Nothing should be written in the code blocks except for Type Vehicle, Number of Occupants, and Frequency.



## Detailed Instructions for Use of Forms

Location: Record on the line provided the street on which you are interviewing.

Date: Record the month, day, and year of the interview.

Hour Beginning: Record the time according to the following schedule:

07 = 7 to 3 a.m.	13 = 1 to 2 p.m.
08 = 3 to 9 a.m.	14 = 2 to 3 p.m.
09 = 9 to 10 a.m.	15 = 3 to 4 p.m.
10 = 10 to 11 a.m.	16 = 4 to 5 p.m.
11 = 11 to 12 Noon	17 = 5 to 6 p.m.
12 = Noon to 1 p.m.	18 = 6 to 7 p.m.

Vehicle Type: As the vehicle to be interviewed approaches, enter in the space on the form the appropriate number - i.e.,  
1. Car; 2. Truck; 3. Taxi

Number of Occupants: Note the number of persons, including the driver, other adults, and children, and enter the number in the space provided. If there are more than 9, use 9.

Destination and Origin: It is probably best to phrase your questions: "Where are you driving to?" and "Where are you driving from?" For locations east of Massachusetts Avenue (i.e., Back Bay, Downtown, and South End), specific street addresses or business names must be obtained. Trip ends in the Prudential area must be identified by building or business names. For example, Auditorium, Prudential Building, etc. Outside of these areas neighborhoods (i.e., Hyde Park), or town names may be used.

Drivers will frequently tell you they are going home or to work. In such cases it is necessary for the interviewer to ask another question, such as "May I please have the street address or a more exact location?". If no destination is given, such as the case of a cruising taxi, someone circling the block, or a driver flatly refusing to answer, indicate the best information possible that you think will be understood by someone analyzing the data afterwards.

Trip Frequency: After determining how often the driver makes this exact trip (same origin-destination and trip route), enter the number from the bottom of the form that most nearly applies

### General

Every precaution will be taken to ensure your safety. You will be issued a reflective safety vest and hat; it is required that these two items of clothing be worn at all times. Also, police officers will be present.

You should realize that while working on this project you are acting as an agent of the City of Boston, and should conduct yourself accordingly at all times.



BOSTON REDEVELOPMENT AUTHORITY  
Transportation Planning Division

## Prudential Area Origin-Destination Study

Location

Date \_\_\_\_\_

Hour Beginning \_\_\_\_\_

Interviewer \_\_\_\_\_

[illegible]

1. Auto
2. Truck
3. Taxi

1. Daily
2. Once or twice weekly
3. Occasionally
4. First time



APPENDIX  
TABLE A  
Major Trip Patterns\*  
Base Day

<u>Zone</u>	<u>Zone</u>	<u>Total Vehicles</u>	<u>Zone</u>	<u>Zone</u>	<u>Total Vehicles</u>
01	02 -----	224	04	04 -----	64
	03 -----	441		05 -----	169
	04 -----	166		06 -----	600
	05 -----	230		07 -----	95
	06 -----	634		08 -----	352
	07 -----	227		09 -----	<u>51</u>
	08 -----	929			
	09 -----	614	Subtotal 04 -----		1331
	10 -----	142			
	11 -----	224	05	06 -----	105
	12 -----	68		08 -----	<u>81</u>
	13 -----	58			
	14 -----	136	Subtotal 05 -----		186
	99 -----	<u>54</u>			
Subtotal 01 -----		4167			
			06	07 -----	71
02	02 -----	98		08 -----	136
	03 -----	156		09 -----	163
	04 -----	254		10 -----	51
	05 -----	414		11 -----	68
	06 -----	617		99 -----	<u>64</u>
	07 -----	193	Subtotal 06 -----		553
	08 -----	275			
	09 -----	112	99	99 -----	169
	10 -----	139			
	11 -----	<u>122</u>			
Subtotal 02 -----		2380	GRAND TOTAL	=	10,263
03	04 -----	81			
	05 -----	210			
	06 -----	671			
	07 -----	136			
	08 -----	193			
	09 -----	54			
	10 -----	78			
	14 -----	<u>54</u>			
Subtotal 03 -----		1477			

\* Movements over 50

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets



APPENDIX  
TABLE B  
Major Trip Patterns\*  
Peak Day

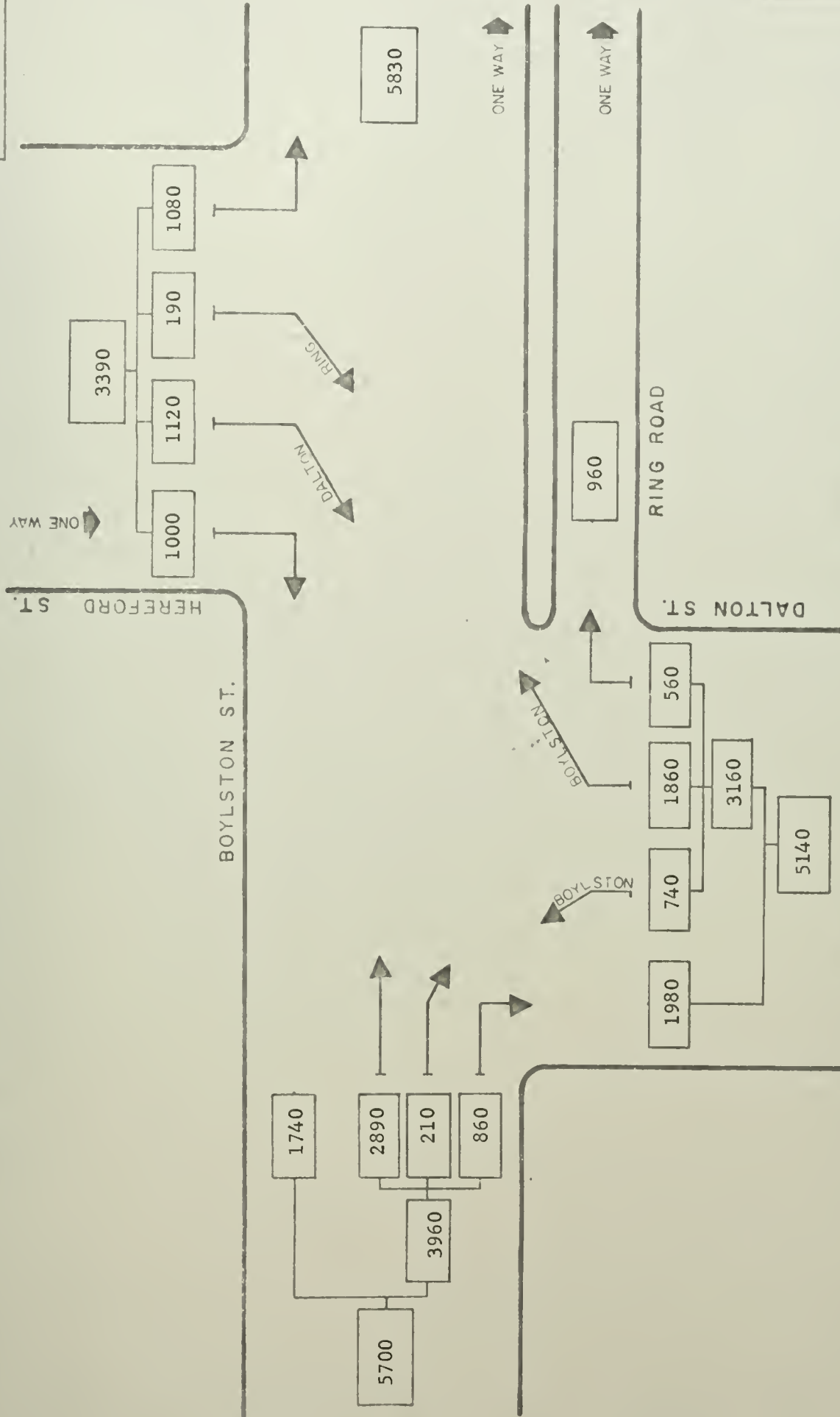
<u>Zone</u>	<u>Zone</u>	<u>Total Vehicles</u>	<u>Zone</u>	<u>Zone</u>	<u>Total Vehicles</u>
01	01 -----	130	04	05 -----	143
	02 -----	428		06 -----	713
	03 -----	981		07 -----	82
	04 -----	229		08 -----	467
	05 -----	246		09 -----	73
	06 -----	695		11 -----	<u>65</u>
	07 -----	216			
	08 -----	1123	Subtotal 04 -----		1543
	09 -----	799			
	10 -----	130	05	06 -----	121
	11 -----	147		07 -----	<u>112</u>
	12 -----	69			
	14 -----	121	Subtotal 05 -----		233
	99 -----	<u>60</u>			
Subtotal 01 -----		5374	06	06 -----	99
				07 -----	65
02	02 -----	156		08 -----	112
	03 -----	246		09 -----	143
	04 -----	393		99 -----	<u>95</u>
	05 -----	462			
	06 -----	764	Subtotal 06 -----		514
	07 -----	255			
	08 -----	397	08	11 -----	<u>56</u>
	09 -----	160			
	10 -----	108	Subtotal 08 -----		56
	11 -----	216			
	99 -----	<u>82</u>			
Subtotal 02 -----		3239	99	99 -----	424
03	04 -----	138	GRAND TOTAL =		12,959
	05 -----	207			
	06 -----	592			
	07 -----	160			
	08 -----	242			
	09 -----	86			
	10 -----	82			
	11 -----	<u>69</u>			
Subtotal 03 -----		1576			

\* Movements over 50

Source: O-D Survey conducted at Boylston, Hereford & Dalton Streets



FIGURE A



Day 1  
Turning Movement Summary  
7 a.m. - 6 p.m.

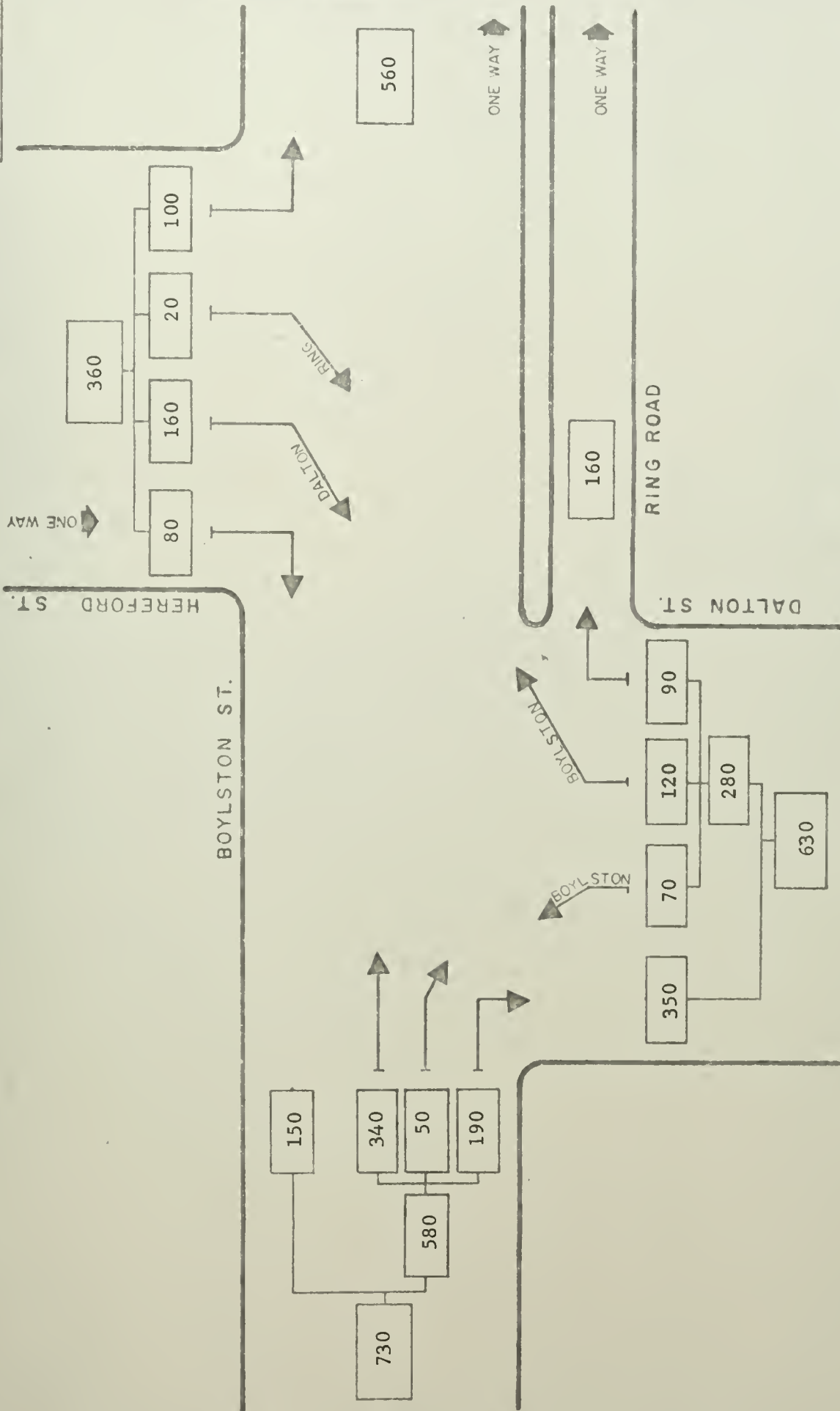


PRUDENTIAL AREA  
ORIGIN-DESTINATION STUDY





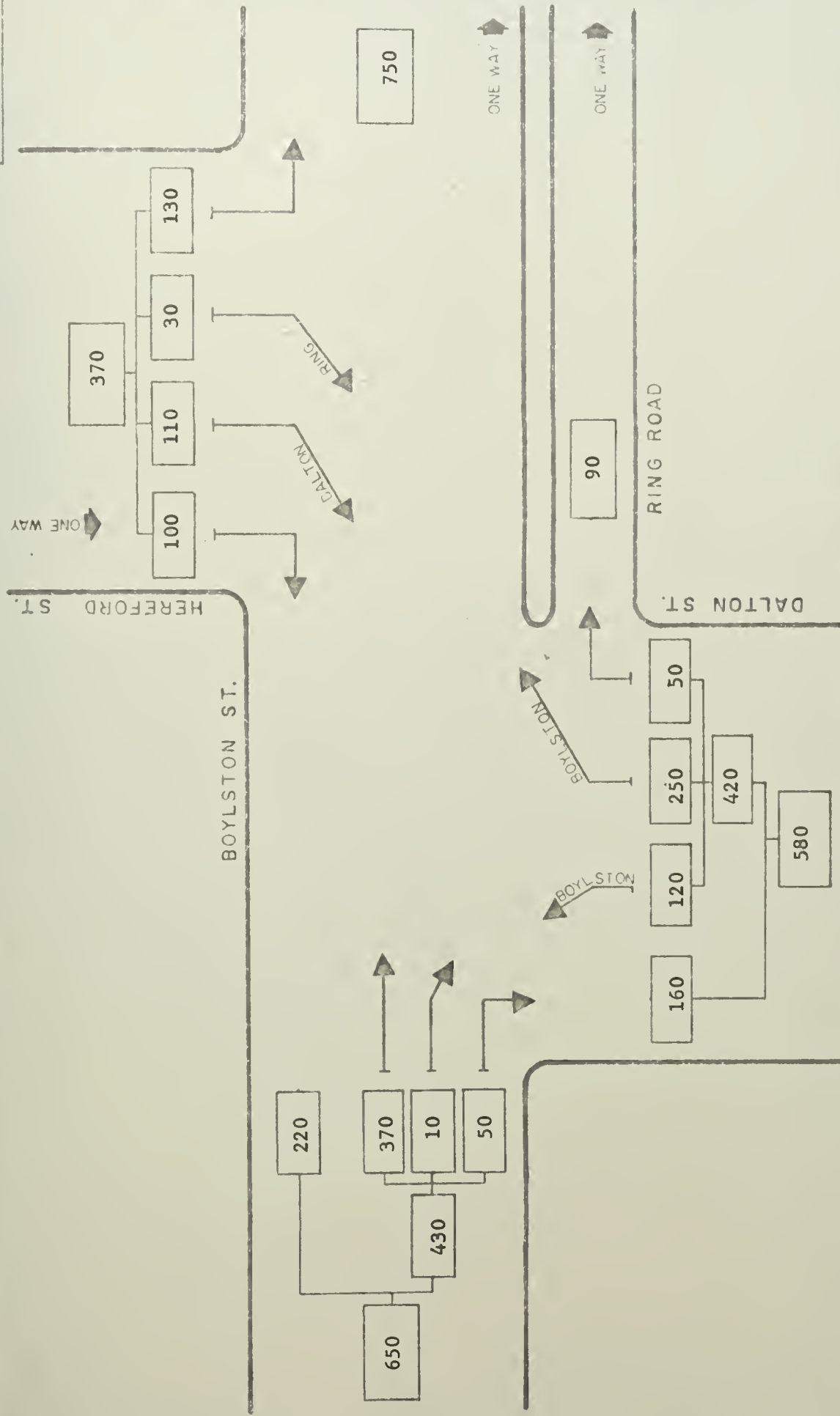
FIGURE B



<p>Day 1 Turning Movement Summary A.M. Peak: 8:30 - 9:30 a.m.</p>		<p>PRUDENTIAL AREA ORIGIN-DESTINATION STUDY</p>
<p>murray d segal      transportation consultant</p>		



FIGURE C



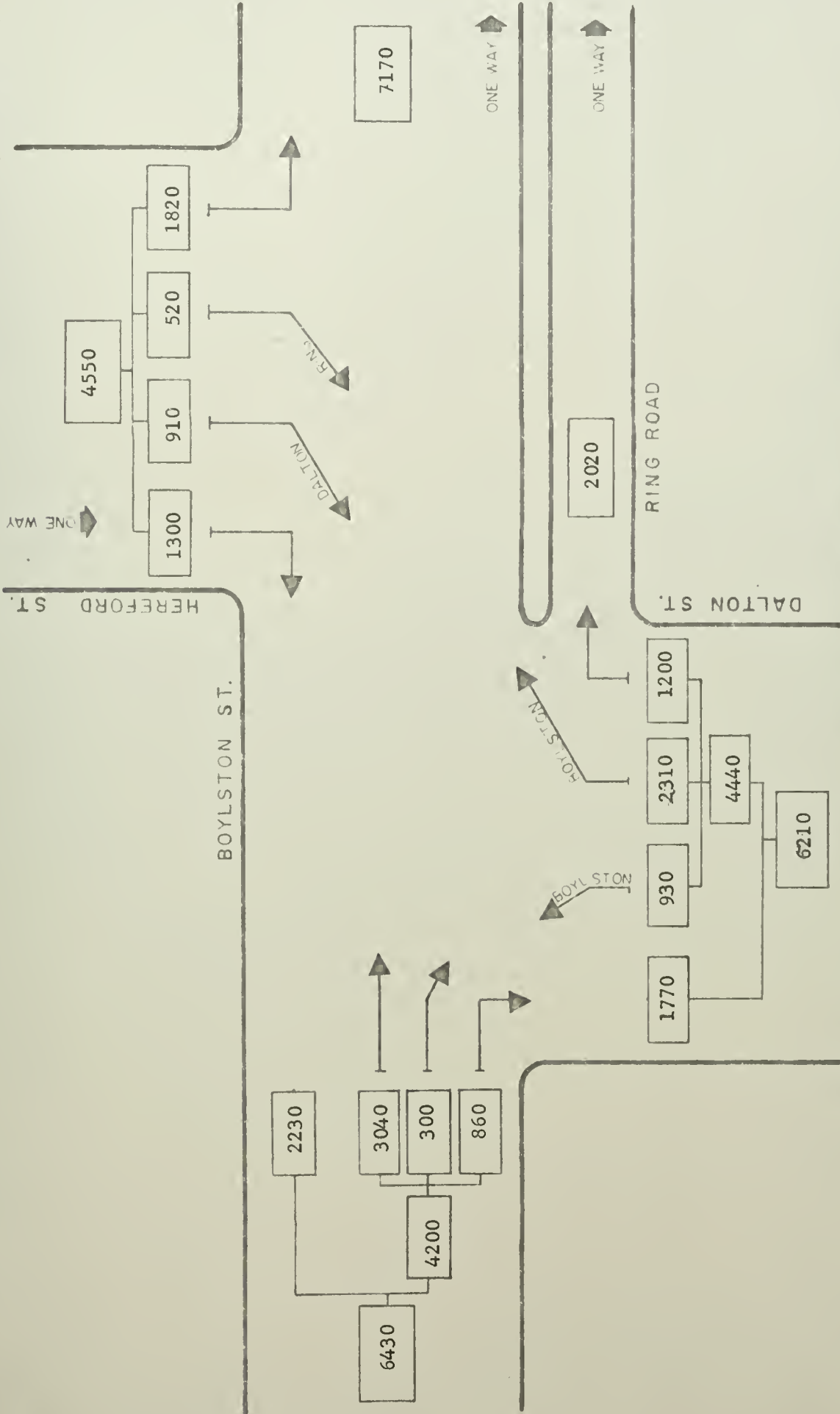
Day 1  
Turning Movement Summary  
P.M. Peak: 4:30 - 5:30 p.m.



PRUDENTIAL AREA  
ORIGIN-DESTINATION STUDY



FIGURE D



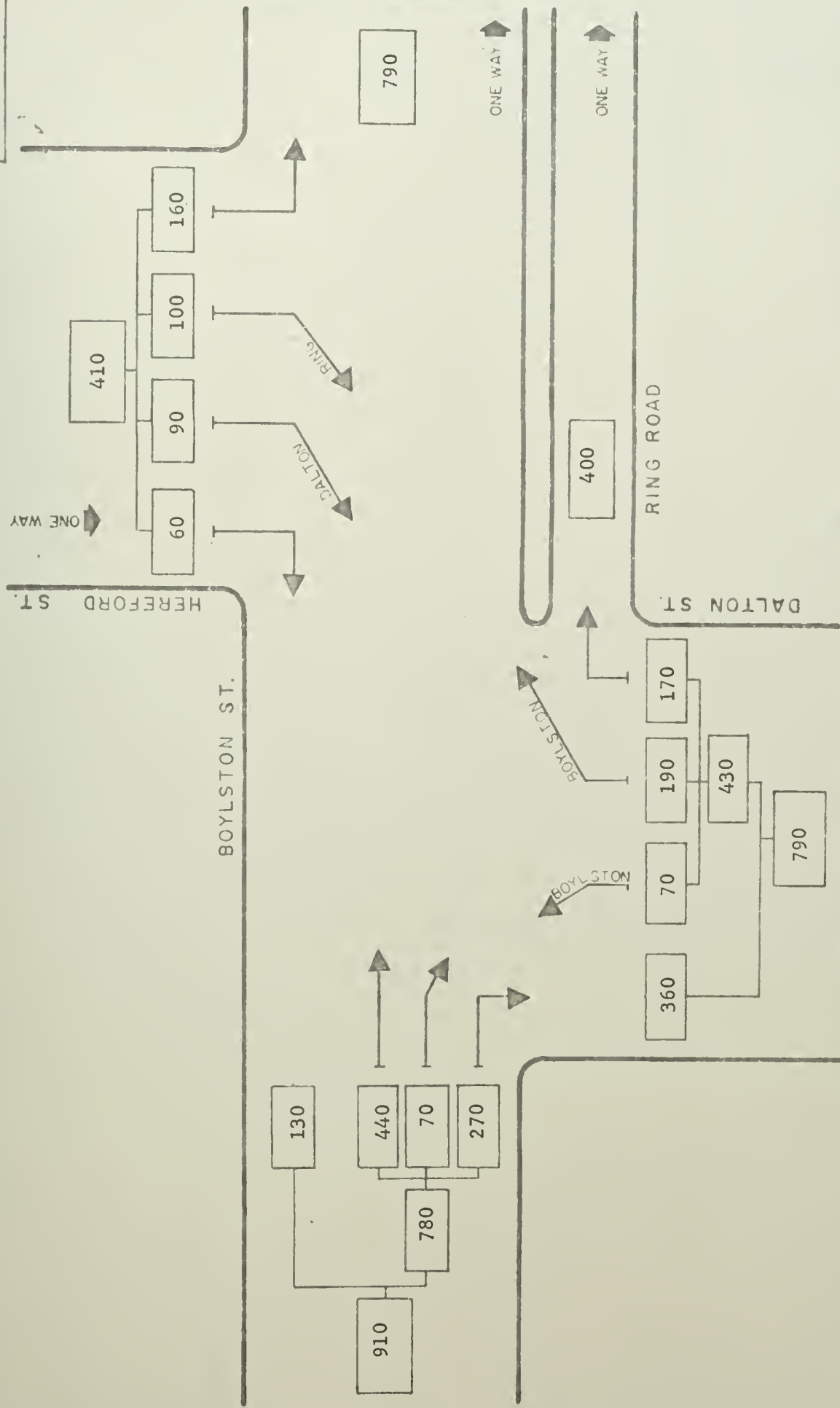
Day 2  
Turning Movement Summary  
7 a.m. - 6 p.m.



PRUDENTIAL AREA  
ORIGIN-DESTINATION STUDY



FIGURE E

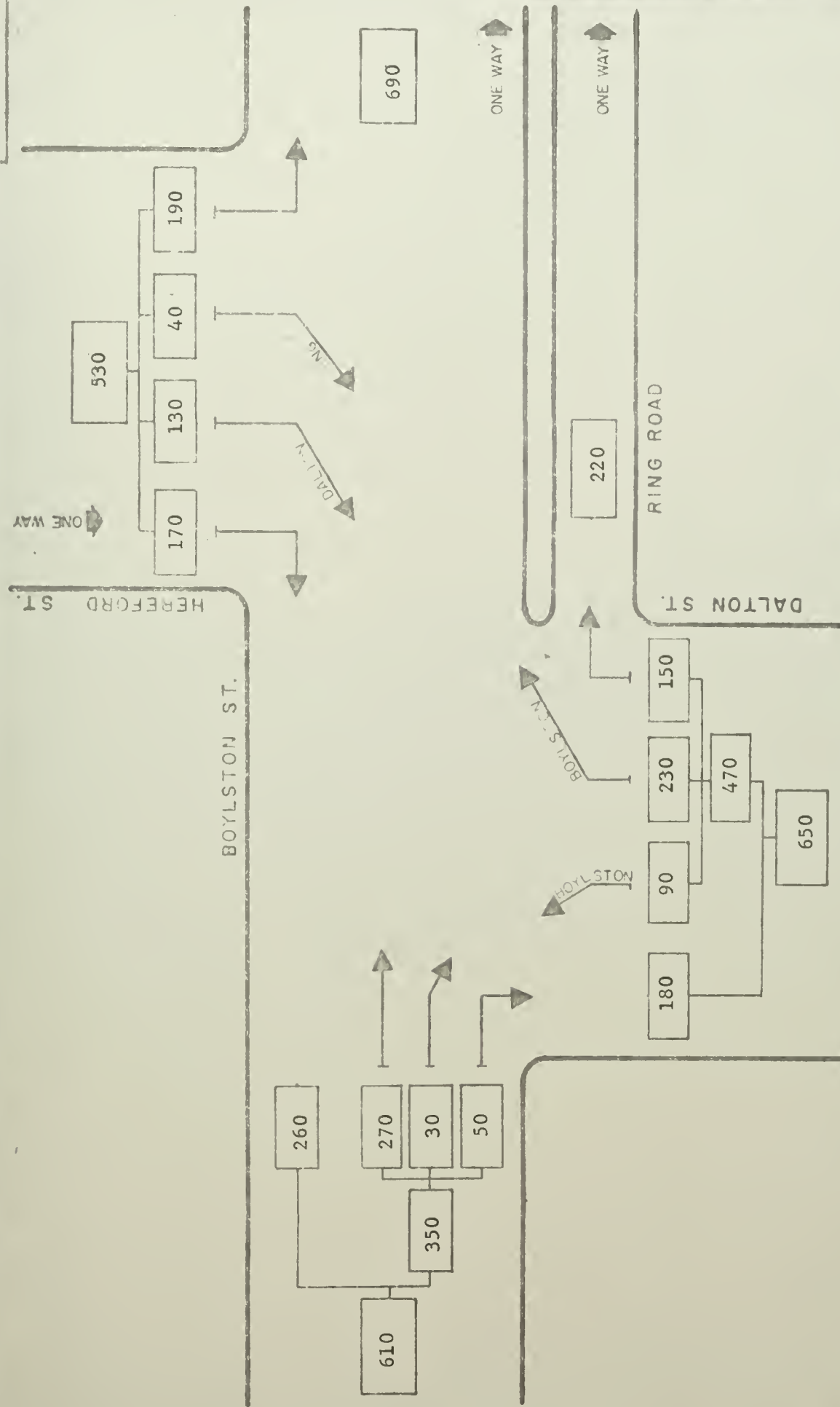


<p>Day 2 Turning Movement Summary A.M. Peak: 8:15 - 9:15 a.m.</p>		<p>PRUDENTIAL AREA ORIGIN-DESTINATION STUDY</p>
<p>murray d. segol transportation consultant</p>		





FIGURE 7

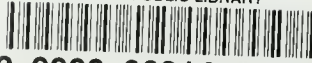


Day 2 Turning Movement Summary P.M. Peak: 1:15 - 2:15 p.m.		PRUDENTIAL AREA ORIGIN-DESTINATION STUDY
murray d segol		transportation consultant





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